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CREDIT SCORING AND ITS ROLE IN UNDERWRITING

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Abstract

The main goal of the research is to study the opportunities for active utilization of credit scoring in the banking, as well as the financial sectors and methods for mutual ensuring of interests of market participants. The article addresses the indicators, that affect the formation of scoring, its macroeconomic benefits, and investigates the history of scoring and the international practice. The article also analyzes the role, the deployment of scoring may play in minimizing losses likely to occur at the end of the transaction term while measuring credit risks of credit institutions that concentrate available financial resources, as well as insurance companies, another chain of the financial system. At the same time, the article addresses how the introduction of scoring may affect access to low-cost financial resources. The role of scoring in timely implementation of liabilities by borrowers and in easy access to favorable financial resources created by the responsible lending may act as a practical significance of the study.

JEL classification: *G21, G22, G29, H81*

Key words: *credit scoring, credit underwriting*

Introduction

A bank loan, as an economic category, is defined as a temporary available funding, granted on a contractual basis that includes the principles of purpose, term, securitization, repayment and interest payment. As a financial agent a bank should measure a number of risks when it attracts available financial resources from the one who supplies (in the form of a deposit) and sells to the one who demands (in the form of a credit) and analyze diverse evaluation parameters. This brings up a question: how should the bank differentiate a 'good' borrower from a 'bad' one?

In the contemporary lending market organizations that supply credit resources apply certain evaluation mechanisms and techniques. For instance, the Five C's of credit by the American economist Michael Sinkey. This evaluation method incorporating qualitative criteria includes the following components:

i. *Condition* – how resilient the borrower's business is to changes in economic conjuncture, volatility, sharp price swings and other similar cases;
ii. *Cash flow* – borrower's liquidity indicators;
iii. *Collateral* – credit securitization and its type;
iv. *Capital* – borrower's own capital, as well as assets and types of assets;
v. *Character* – borrower's individual qualities.

However, in most cases the process of lending necessitates such mechanisms that may convert qualitative indicators of 5Cs and other evaluation principles to quantitative indicators, statistic models. Credit scoring is critical among the models of the type.

Scoring is a mathematical – statistic model, reflecting the relationship of borrower's behavior to the credit risk level. Credit scores are derived from application of advanced algorithms and statistic formulae to data in person's credit files on the moment the score is obtained and are available in a 3 digit format.

History

The notion of scoring, which has been used for over a half century, was first mentioned by the founders of the Fair, Isaac and Company – 2 young American specialists: engineer William Fair and mathematician Earl Isaac in 1956. They founded the FICO on the same year and succeeded in convincing credit resource owners that utilization of mathematical formulae may prove to be more effective in evaluating the risk of default in lending than exotic methods of the most experienced credit specialists. Credit scoring started to be more broadly supported by users in the economic society in 1995. Accordingly, 2 huge US mortgage agencies – *Fannie Mae* and *Freddie Mac* recommended lenders to use the FICO scoring. Given the fact that these two institutions account for the two thirds of the US mortgage market, it will not be hard to estimate the effect of this recommendation.

International practice.

In an international practice many companies develop credit scores based upon various contents that range differently. Certain US companies develop diversely ranged credit scores. The table below illustrates companies and their score ranges:

Company	**Product**	**Score range**	
		Lowest	Highest
Equifax	Equifax Credit Score	280	850
Experian	Experian Plus Score	330	830
TransUnion	Trans Risk New Account Score	300	850
Fair Isaac Corporation (FICO)	FICO score	300	850

Table 1. *Score ranges by US companies*

The US produced *VantageScore* is also widely used in addition to the above. The VantageScore LLC is considered to be the partner of the Equifax, Experian and TransUnion. The Company develops a final unique score using specific models and advanced databases to gather aggregate credit data from 3 credit reporting organizations (Equifax, Experian, TransUnion). *VantageScore* ranges between 501-990.

A number of companies offer credit scoring services in Europe: the *CRIF* in Italy, the *CreditInfo* in Iceland and the German *Schufa* are the most developed. Their credit scores range as follows:

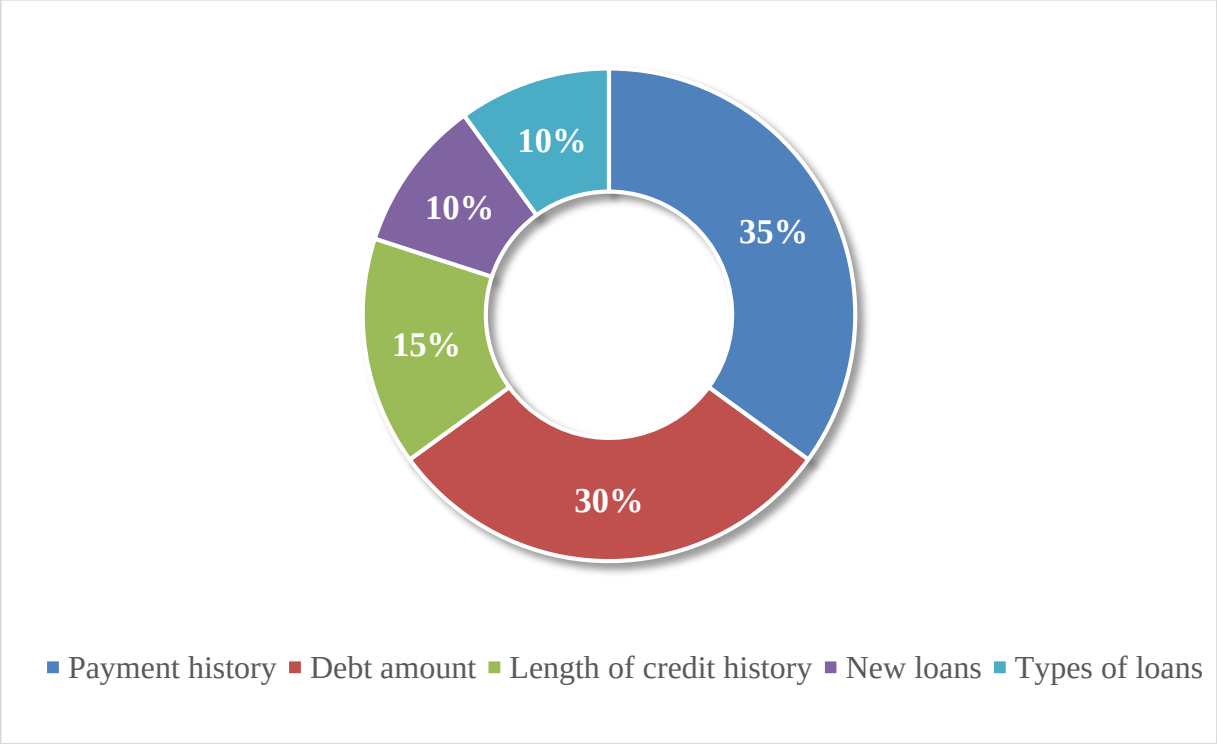
Company	Product	Score range	
		Lowest	Highest
CRIF	CRIF score	400	600
Schufa	Schufa-Vollauskunft	100	600
CreditInfo	Creditinfo Predictor	250	900

Table 2. *Score ranges by certain companies from Italy, Germany and Iceland*

Relevant services are rendered by *Kredi Kayıt Bürosu* in Turkey. In total, 82% of credit bureaus functioning in Europe offer credit scoring to their customers.

The weight of credit data in a credit score.

Although parameters of credit data that stipulate the formation of credit scores are basically similar, their weight varies in terms of impact on the score. The following graph illustrates breakdown of credit data in the FICO score:



Graph 1. *Breakdown of credit data in the FICO score*

Let us analyze each parameter individually.

Payment history covers 35% of total credit score and includes the borrower's payment manner on all of his credits, the number of delinquencies on all overdue credit

liabilities, and overdue amount, as well as other acts of public responsibility (seizure of salary, litigations, other outstanding debt etc.) and their amounts.

The following 3 factors are focused on when analyzing overdue liabilities:

i. *Frequency of delinquencies* – considers when the delinquency occurred. Outdated delinquencies have a little effect on the score;
ii. *Regularity of delinquencies* – naturally, the score of the borrower with one or two facts of delinquencies will be far better than the one with a number of delinquencies;
iii. *Severity of delinquencies* – there is a clear hierarchy of bad indicators in the credit score, i.e. delinquencies up to 30 days have lesser negative impact than delinquencies up to 60 or 90 days. Other court imposed sanctions, including tax sanctions and bankruptcy are considered to be the parameters with the most negative impact on the credit score.

Debt amount covers 30% of total credit score and analyzes aggregate outstanding amount of active loan debts, the number of active loan accounts, the ratio to used credit lines and the credit line limit.

Length of credit history covers 15% of total credit score and considers the following 2 factors:

i. age of the oldest credit account;
ii. average age of all accounts.

It is possible to get a good score with a short credit history. However, in practice the 'antiquity' of the credit history has an upward effect on the score.

New loans cover 10% of total credit score. This indicator is affected both by the number of newly obtained loans and the number of credit enquiries credit institutions maintained on him to evaluate borrower's financial standing. This parameter allows for the following indicators:

i. number of loan requests made to credit institutions in the recent date;

ii. number of loans obtained in the recent date;
iii. time passed since the last loan request made to credit institutions;
iv. time passed since the time of the last loan.

Types of loans cover 10% of the total credit score. A credit file with different loan products has a positive effect on the score. It is rational to balance between revolving debts (credit cards, credit lines) and the types of debt with equal installments (car loans, mortgage loans etc.) to get a high score. However, it should be taken into account that loans obtained without any necessity for the sake of a positive score may ultimately have negative impact. Hence, since the system captures every request to a credit institution for a credit product, these efforts may have a backfire resulting in a negative effect on the score.

The above parameters have not a separate, but a complex effect on the score formation. Therefore, it is more advisable to follow financial discipline in total to get and maintain a high credit score rather than take efforts to improve separate parameters with negative characteristics in the credit file.

The place of credit scoring in bank's credit policy.

Scoring systems rest upon such an assumption that persons with similar socio-economic indicators exhibit similar behaviors. For instance, if to indicate borrower's certain features (gender, age, work place, position etc.) and financial indicators (income, expenses etc.) with certain coefficients, we can categorize every new borrower as 'suitable' or 'non-suitable' according to his data. However, we should highlight that scoring, to be more exact, credit scores, do not include an ultimate decision, it is just an objective evaluation tool in internal decision making.

Credit scoring makes credit decision making more flexible. Accordingly, if integrated to internal decision making systems, credit scores trigger automation of credits related decision making, which, in its turn, minimizes subjectivity of bank's credit officers at evaluation of loan requests. Moreover, credit scores may be used in imposing certain limits on realized credit products. As stated above, appropriate limits allow to differentiate 'suitable' borrowers from 'non-suitable' customers. Thus, the

bank offers credit products to the category of positively characterized borrowers with good scores under more flexible credit terms and conditions. Doubtless that the most fundamental condition is the price of the product, i.e. its interest rate. The bank may apply a diverse approach to borrowers with unsatisfactory scores. Accordingly, the bank may take 2 types of actions when deciding whether to grant a loan to a borrower:

i. to completely refuse to grant a loan;
ii. to realize a loan under more complex conditions.

In substance, the credit score is a specific level of the credit risk the borrower may be exposed to. The level of this risk is disproportionate to the bank's intention to lend, that is the higher the risk level is, the lower is the bank's desire to lend. If so, the bank make take a decision to sell the loan at a price higher than the market value to compensate for the risk it may be exposed to.

Macroeconomic benefits.

On a macro level credit scoring provides a number of benefits to the economy. Above all, it is critical in creating easy access to available financial resources. Minimum constraints to the resources in question play a significant role in maintaining economic growth and averting recession in the long run. Additionally, keeping expenses to obtain loans low assists to maintain smooth consumption when earnings are high and low.

Credit scoring also allows to boost financial discipline in the lending market, and maintain borrowing reputation. Access of economic agents to credit resources becomes broader with the minimum risk of subjective evaluation by a bank employee and objective underwriting. However, non-timely implementation of liabilities over maturity, as well as a number of other parameters may result in constraints in borrower's easy access to financial resources. Moreover, even if there are no delinquencies over the maturity, several simultaneous active credit debts may be evaluated high risky and indirectly result in a low score. Accordingly, credit scoring helps every borrower to apply responsible borrowing, promoting high discipline in the payment manner and assists in obtaining a credit resource under more favorable terms

and conditions within a short period of time. On a macroeconomic level, it enables to minimize credit risks in the sector in the long run.

The role of the credit score in other sectors of the financial system.

Albeit being broadly used in banking, credit scores are utilized in other sectors of the financial system due to their influence on the minimization of credit risks. Accordingly, borrower's deep and broad underwriting is critical in preventing financial losses likely to occur in the end both in banking and insurance.

Scoring being introduced in the USA led to the creation of insurance related credit scores firstly in the USA. The 1970 *Fair Credit Reporting Act (FCRA)* allowed to apply credit scores in insurance. The FICO assessed the existing situation in the insurance market late in 1980 and started to take actions on the application of relevant scores. And in 1991 the Company introduced a first insurance score developed on the basis of credit bureau data. Currently state-of-art information and communication technologies enable several large companies to widely use insurance scores globally.

An insurance score calculates the likelihood of an insurance claim by the insuree against the insurer within a certain timeframe. Virtually, as in credit scores, the score is disproportionate to the price, terms and conditions of the insurance product to be offered. That is a low score means coverage of insurance under more complex, while a high score means coverage of insurance under more favorable terms and conditions. Studies suggest that over 70% of US consumers get insurance products at certain discounts based on scores. The key logic here is that persons who apply for insurance may be erroneously classified without scores. That is, for instance, a responsible driver will indirectly take part in financing of the loss an insurance company may incur as a result of non-disciplined behavior of another driver by paying high insurance coverage. Consequently, an insurance tariff will be high for low risky customers and low for high risky customers.

Several researches prove that active utilization of insurance scores in underwriting is proportionate to occurrence of insurance events. James E. Monaghan, the actuary of the *MetLife*, one of the largest players of the USA both in the local and global markets researched the relationship between drivers' financial discipline and

company's losses on over 170,000 vehicle insurances. As known, insurance loss reflects the ratio of premiums paid by an insurance company per USD 1 of its savings. Table 3 below illustrates the relationship between the number of driver's savings accounts and insurance losses:

# of savings accounts	**Insurance loss**, *in %*
N/A	74.1%
1	97.5%
2	108.4%
3 and over	118.6%

Table 3. *Relationship between savings accounts and insurance losses*

The expert discovered the relationship between administrative enforcement measures (bankruptcy, financial sanctions, non-executed liability documents etc.) and insurance losses in his research:

# of administrative corrective measures	**Insurance loss** *(%)*
N/A	73.8%
1	96.5%
2	104.2%
3 and over	114.1%

Table 4*. Relationship between the number of administrative corrective measures and insurance losses*

Results of an independent research by the Texas University *(UTA)* conducted over the following years were similar to those of the research by James E. Monaghan. The relationship between insurees, who filed insurance claims over recent 12 months on 153,326 automobile insurance policies and their scores displayed that whereas insurees with lower scores expose the company to higher losses, customers with high scores cause fewer losses. Specialists of the higher educational institution identified that over the researched period while average loss of customers with low scores on automobile insurance was USD 918, the relevant indicator on high scores was USD 558. Average loss on this policy equaled USD 695.

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